MARINE REVIEW.

VOL. X. CLEVELAND, O., JULY 12, 1894. No. 2.

The Fastest Cruiser in the World.

If nothing unusual happens the daily papers will announce sometime this week that the United States has the fastest cruiser in the world. The triple-screw sister-ship of the Columbia started Monday from Philadelphia for Boston where she will be joined by the naval trial board. She has already done better than the Columbia on her preliminary trial by making 21.75 knots per hour with steam at 160 pounds and 138 revolutions per miuute. The course lies between Cape Ann and Cape Porpoise, and is accurately laid out for a distance of 43.969 knots. The trial will consist of one run over the course northward, a long turn at full speed without disturbing the conditions of the engine adjustment, and a return run over the course southward. The time occupied in turning will not be taken into account, but only the exact time on the course will be used in computing the speed. Corrections are made for tide and currents from the careful observations of officers stationed on the several ships and tugs which are anchored at short intervals along the course. For particulars as to how war ships are prepared for trial see No. 12 Vol. 9, March 22, of the REVIEW.

The Minneapolis was contracted for the 31st of August, 1891, at a cost price of $2,690,000. A speed of 21 knots is guaranteed by the contractors, and if the average speed maintained for four consecutive hours on the official trial shall fall below this figure, a penalty is fixed for each quarter knot of decrease, of $25,000. Should, however, the average speed exceed 21 knots, the government agrees to pay a premium of $50,000 for each quarter knot of excess. The principal dimensions of the hull are: Length on load water line, 411 feet 7¼ inches; beam, 58 feet; mean draft, normal, 24 feet; displacement, 8,005 tons; mean draft for trial, 22 feet 6 inches; displacement for trial, specified, 7,350 tons.

The main boilers, eight in number, are the largest marine boilers in the world. Six of them are 15 feet 9 inches in diameter and 20 feet long, while the other two are 15 feet 3 inches diameter, and 18 feet long. They are of the cylindrical, horizontal, return fire-tubular type, double ended with four corrugated furnaces in each end. These eight main boilers weigh (empty) about 560 tons. Their principal dimensions are as follows: Total grate surface, 1,456 square feet; total heating suaface, 48,194 square feet; total number of tubes, 9,752; diameter of tubes, 2¼ inches. The diameter of the furnaces is 39 inches for the smaller and 40 inches for the larger boilers, while the grate is about 6 feet 6 inches long. Cone's shaking grate is used in all the boilers. The total amount of contained water at steaming level is about 300 tons, and here quite a wonderful illustration is offered of the requirements, in water for the production of the driving power of these large ships. The estimated horse power of the Minneapolis is 20,000, and, at the fair rate of 17 pounds of water per horse power per hour, these boilers must vaporize 340,000 pounds of water per hour or or more than two and one-third tons per minute. Ample provision in the shape of numerous feed pumps is made for supplying several times this quantity, so that a big reserve is kept for emergencies and

[CONTINUED ON PAGE 12.]

TRIPLE-SCREW CRUISER MINNEAPOLIS AT ANCHOR.

No Canadian Sault Canal this Year.

A SUMMARY OF THE WORK ON THE TWO BIG LOCKS LEADING TO LAKE SUPERIOR.—SUCCESS WITH THE HAY LAKE CHANNEL.

SAULT STE. MARIE, Mich., July 12.—It may be said with absolute certainty that there will be no Canadian Sault canal this year to relieve the delays encountered in Lake Superior commerce. All the talk about the canal being opened to navigation during the present month is absurd. I don't know how the contractors and dominion officials are to adjust matters pertaining to the big bonus offered by the government for a hurried completion of the work, but I have gone over the ground with a gentleman well acquainted with all of the details connected with the construction of the big locks on this side, and I am satisfied that the knowledge of an expert is not required in judging as to the possibility of completing the canal and lock for general service this season. Quite a large amount of the masonry work in the west wall of the upper part of the canal is yet unfinished, much of the machinery is not yet on the ground, the gates being constructed in the canal are only partly finished, and on all the detail of equipment there is only a fair start as yet.

For some reason the engineers and others connected with this work have all along said that it would be finished during the present month. This statement has been made without denial in Canadian newspapers even as late as a few days ago. It is doubly disappointing now to know that the best that may be expected is the passage for trial, of a few tugs or small boats in the fall, when it may be possible to let water into the lock, and when, too, the extreme time for securing the big bonus may have arrived It will be surprising if this allowance to contractors, alike to many other "extras" of its kind, does not connect some strange stories of political jobbery with the canal. The work as far as it has progressed is highly commended by engineers who are fully competent to judge of its merits, but almost in the center of the canal, some distance above the lock, is an immense stone structure for a railway bridge support. There is no evident cause for this pile of stone being set up as an obstruction in the canal, except as a means of saving a few dollars to the railway in constructing a bridge that would move over the full span of the canal. To the casual observer this obstruction must be regarded a monument to the influence of the Canadian Pacific Railway in the affairs of the dominion The engineers are said to be in no way to blame for it. They laugh at the thing, and the government ought to be laughed into removing it. At this late day, a bridge support in a canal constructed entirely of masonry and less than 200 feet wide is certainly a curiosity.

But there is nobody here desirous of criticising the dominion canal work. The only disappointment is in the failure to complete the work as early as was expected. The contractors having in charge the lock work proper may get their bonus, but if other details necessary to the passage of vessels are not hurried it will probably be late next season before the canal can be said to be open to navigation, and it may as well be admitted that both contractors and engineers in charge of our own new canal are quietly expecting to be locking vessels next season as early as the Canadians, although they are not saying a great deal about it. Neither Gen. Poe nor Mr. Wheeler, the general superintendent, will refer to any time other than December of next year as the time for completion of the new lock and approaches here, but it is nevertheless certain that they hope to begin locking vessels considerably before the close of next season. The conclusion of this year's work will see the lock practically completed, and there is about 2,500 feet of pier work that can be done after the approaches in the immediate vicinity of the canal have been advanced sufficiently to admit of the passage of vessels. To the visitor who crosses the river to the Canadian side there is a marked contrast between the long and narrow lock there and the shorter but wider canal on this side. Both will, of course, admit of the passage of the deepest draught vessels now afloat, but in area the American lock is much the larger. They may be compared in this way:

	Length, feet.	Breadth, feet.	Area, sq. ft.
Canadian lock	900	60	54,000
United States lock	800	100	80,000

Thus it will be seen that on account of great width four of the largest vessels now in service on the lakes may be passed in one lockage through the American canal, while only two such vessels could pass at the same time on the other side. Still the canal on the dominion side is suited in width to vessels of the greatest size that may be expected for many years to come.

Among many people on both sides of the river from whom information has been sought on the question of tolls there is nothing definite to be learned, but the conclusion generally is that the Canadian government is not putting five millions or more into this project without a definite policy of tolls in view. In fact, it is thought that the completion of this canal will mark the re-establishment of tolls on the Welland discriminating against United States vessels using that waterway. In several sections of channels connecting the lakes we are dependent upon dominion waterways, and if tolls are established in this new canal the Canadians may claim that, although they have had the use of our Sault canal in the past, we have had a very large tonnage in the Welland against only 4 per cent. of their tonnage at the Sault. The broad and liberal policy of entire freedom in this new waterway would undoubtedly result in American vessels using it to some extent, but if the canal is to be used for the purpose of discrimination at the Welland, another international controversy may be expected. There are those in our government who would advocate retaliation through dealings with the Canadian Pacific Railway, but these matters can better be discussed if there is occasion for bringing them to an issue.

A GREAT CHANNEL.

On July 4 and on Sunday last, when the dredges were not at work, three or four vessels came up through the new Hay lake channel, and the captains are earnest in their praises of it. Everything will be using it as soon as the contractors clear up, about two weeks hence, small portions of the work upon which they have secured extensions. The channel is practically ready for use now, but as targets are not yet fully painted and as an accident due to a dredge being in mid channel or any other similar cause might reflect upon the success of the work at the outset, it is deemed advisable not to permit of general use of the channel, even in day time, until all is in readiness. I came through it to the canal on the Cadillac with Capt. Symes and Pilot Joseph Rouleau on the Fourth. There is not a difficult turn in it, and with a good system of lights, vessels will take to it by night just as sure as they will give up the old route for it. At every point where there was possibility of cross currents the side banks have been built up to overcome such obstacles, and even the stray boulders in the 20-foot work clear up to the lock approach are buoyed and are fast being removed. On Sunday Capt. Orville Green in the Griffin, who was also piloted up the new channel by Capt. Rouleau, was passed just below the channel entrance by the fast Canadian Pacific passenger steamer Alberta, headed up for the old channel. When the Alberta reached the lock the Griffin had locked through and was on her way in Lake Superior above the canal. There is absolute certainty of a gain of an hour and a half to an hour and three-quarters by the new route.

Twenty-nine and a Quarter Knots.

In one after another of the forty-two torpedo boat destroyers which have been ordered during the past two years by the British admiralty and which are now coming up for trial, the record of speed afloat is being advanced. The Daring, one of the latest of these vessels to be given a trial on the measured mile, made on one run the remarkable speed of 29.268 knots when steaming against the tide. The time occupied on the run was 2 minntes 3 seconds, the revolutions were 395.1 per minute and the steam pressure 215 pounds. Indicator cards taken on the run in which this speed was attained, worked out to 4,842 indicated horse power. The Daring was built by J. I. Thornycroft & Co. She is a twin-screw vessel 185 feet long, 19 feet wide and 13 feet deep.

Engineering of London gives an interesting description of the boat's engines. They are of the three-stage compound type, and have cylinders 19 inches in diameter for the high pressure engine, 27 inches for the intermediate, and a pair of 27 inches in diameter for the low pressure. The stroke is 16 inches. Each set of engines may be said to be divided into two parts. Thus the high pressure and intermediate cylinders form one half, whilst the two low pressure cylinders form another. The cylinders are inclined from the vertical alternately to the right and left. Piston valves are not used, but the larger surfaces of the flat slide valves are balanced to relieve the pressure on the back. Following the line of the engines we have first the eccentrics and link motion which work the slide valve of the high pressure cylinder, which are run on an overhung part of the shaft. There is next a main bearing, after which come the high pressure and intermediate cranks. Immediately aft again is another main bearing and then the eccentrics for the intermediate slide valve, which are followed by the forward low pressure eccentrics. Another main bearing follows, and then the two low-pressure cranks, after which another main bearing, and then the after low-pressure eccentrics, beyond which is the thrust block. The inclined position of the cylinders enables the axes of the cylinders to be brought close together in a fore and aft direction, and advantage is taken of this to introduce an arrangement of cranks that is certainly unusual for torpedo boat practice. In place of there being a separate two-web crank for each cylinder with a length of shaft between, there are three webs to two crank pins, the center web being common to both, and receiving a crank pin at each end. The center web has naturally to be twice as long, or nearly twice as long as each of the others—the cranks being almost opposite to each other—and it may be said, therefore, that the cranks are double-webbed. It will be seen that by this arrangement there is a considerable gain in fore-and-aft space occupied. The boilers are of the Thornycroft water tube type, three in number, with a total heating surface close upon 8,000 square feet and a grate surface of 189 square feet.

EXTRA COPIES OF THE LAST ISSUE OF THE REVIEW CONTAINING ALL SUPPLEMENTS WILL BE MAILED TO ANY ADDRESS UPON RECEIPT OF 50 CENTS IN STAMPS.

Light Coal and Heavy Ore Shipments.

On July 1 a year ago, shipments of coal, anthracite and bituminous, to Lake Superior amounted to 883,189 tons; on the first of the present month they amounted to 247,465 tons, of which 187,741 tons was anthracite and 59,724 tons bituminous. During all of last month the shipments of bituminous coal through the St. Mary's falls amounted to only 12,300 tons. On the other hand, iron ore shipments from Lake Superior on July 1 of this year aggregated 2,162,532 net tons, against 1,091,466 net tons on the same date in 1893. The figures regarding coal shipments show that there has been practically no movement of that commodity to Lake Superior up to this time, on account of the labor difficulties. Ore shipments are, however, so well advanced that if the estimates of conservative shippers are to be accepted nearly one-half of the Lake Superior output has been moved. The lowest estimates place the output of the Gogebic range at 1,500,000 tons, that of the Vermillion at 1,000,000, Mesabi 1,500,000 and Port of Marquette 800,000 tons, or a total of 4,800,000 tons. In times of disturbance like the present, however, predictions and estimates are of little value and the statement of Lake Superior business already done is here presented for whatever conclusions may be drawn from it.

EAST BOUND.

ITEMS.	Designation.	To July 1, season of 1893.	To July 1, season of 1894.
Copper	Net tons	26,886	29,822
Corn	Bushels	1,112,614	1,164,057
Building stone	Net tons	8,465	6,333
Flour	Barrels	1,710,924	2,571,620
Iron ore	Net tons	1,091,466	2,162,332
Iron pig	Net tons	4,763	6,115
Lumber	M. ft. B. M	156,838	212,814
Silver ore	Net tons	415	372
Wheat	Bushels	16,770,069	7,736,380
Unclassified freight	Net tons	36,583	43,118
Passengers	Number	1,579	2,765

WEST BOUND.

Coal, anthracite	Net tons	.....	187,741
Coal, bituminous	Net tons	883,189	59,724
Flour	Barrels	250	753
Grain	Bushels	300	500
Manufactured iron	Net tons	9,847	8,121
Salt	Barrels	69,953	64,825
Unclassified freight	Net tons	71,787	76,393
Passengers	Number	1,877	2,662

*Anthracite and bituminous were not separated in 1893.

	To July 1, 1893.	To July 1, 1894.
East bound freight, net tons	2,120,566	3,116,260
West bound freight, net tons	975,429	242,155
Total freight, net tons	3,095,995	3,358,415

Although the freight tonnage during June of this year was, as shown by the following table, 18,726 tons less than in June, 1893, (due mainly to vessels going up light, on account of scarcity of coal, the registered tonnage and the entire business of the canal otherwise was greater than that of any preceding month in the history of the canal:

	Month of June, 1894.	Month of June, 1893.	Increase, June, 1894.	Decrease, June, 1894.
Vessel passages	2,345	2,136	209	.....
Registered tons	2,119,731	1,822,369	279,382	.....
Freight, tons	1,842,369	1,921,095		18,726
Number of passengers,	3,727	2,698	1,029	.....

A large increase in the number of passengers for the month and for the full season is due largely to the business of the Northern line steamer North West. On June 24, ninety-eight vessels passed through the canal, which exceeded by two the greatest number that ever passed through in one day, and also exceeded by two the estimates of the ultimate capacity of the lock.

Motive Power of the North West.

In a conversation aboard the steamer North West, a few days ago, Mr. Richard Peck, the engineer, who was engaged, upon the completion of the big passenger boat, to look after her motive power, on account of his special knowledge of the practical workings of marine engines, said that some changes necessary to the development of full power from the engines will be made later on, the most important of them probably not until the boat is laid up. The North West with the present conditions of engines and boilers is capable of making schedule time, barring unusual delay at the Sault canal, and the boat's managers have no doubt that she will attain a speed considerably better than 20 statute miles an hour when contemplated alterations in details of machinery are made.

Mr. Peck says that the only important change necessary with the boilers is in feed pumps. Although great advantage was anticipated in the use of fresh water on the lakes, it has been found that the Belleville type of pump, specially adapted to supplying water to the boilers from surface condensers, is not suited to lake water, which contains substances foreign to water that has passed through surface condensers. When matters of this kind are fully determined, it is understood that work on the second boat will be resumed, so as to have her in readiness for next season, but there will be no change from Belleville boilers and quadruple expansion engines.

The number of passengers on the boat has been increasing with each trip, and the managers claim that the traffic is fully up to expectations.

New Tonnage.

The following table shows the number and tonnage of sailing and steam vessels built in the United States to which official numbers were awarded by the bureau of navigation, treasury department, during the quarter ending June 30, 1894:

	Sail Vessels.		Steam Vessels.	
	Number.	Tonnage.	Number.	Tonnage.
Wooden	199	13,438.03	87	14,210.69
Iron and Steel			18	20,854.56
Total	199	13,438.03	105	35,065.25

During two weeks ending June 30, 1894, the bureau awarded official numbers to the following lake vessels: Steam—Kearsarge, Cleveland, 3,092.70 tons gross, 2,721.37 net, No. 161,061; Adella Shores, Detroit, 702.84 gross, 618.70 net, No. 107,100; C. L. Boynton, Port Huron, Mich., 103.10 gross, 51.55 net, No. 127,027; Helen Taylor, Grand Haven, Mich., 82.87 gross, 55.39 net, No. 96,270; Jim Pullar, Marquette, Mich., 39.04 gross, 17.28 net, No. 77,146. Unrigged—J. R. Earnest, Toledo, O., 50,31 gross, 27.37 net, No. 46,457.

In General.

One of the New York trade publications says Miers Coryell, who went to London recently to engage as consulting engineer with shipping firms using Belleville boilers, will also represent the Blake pump company in England.

A cargo consisting of 70,000 carcases of sheep, 9,000 haunches, 9,000 legs, about 550 tons of frozen beef, other meats in smaller quantities and 750 cases of butter, was recently carried to London from Australia and New Zealand by a British ship fitted with an ammonia refrigerating plant. Until recently only cold air machines were used in this trade.

At a meeting held recently in New York the American Steel Barge Company acquired full control of the Pacific Steel Barge Company and the latter corporation no longer exists. One-third of the stock of the Pacific Steel Barge Company was owned by the American Steel Barge Company and a large portion of the balance of the stock was also owned by stock-holders in the parent corporation, so that the consolidation is a sort of a family matter. It is again said that the whaleback steamer begun at the Pacific yard, Everett, Wash., will be completed immediately.

The rudder of a new 144-foot torpedo boat Chevalier, built by M. Normand for the French navy, is placed in front of the propellers to avoid the effect of pitching. It is not found to effect the action of the screws if sufficient space is left between them and it. The screws are arranged one in front of the other and slightly overlapping, and rotate in the same direction, instead of being right and left handed, as usual. At high speeds this gives the boat a list of about 2°. The highest speed yet attained has been 27.22 knots, but the full designed boiler pressure of 213 pounds per square inch, was not maintained. The boat has two tubulus boilers of the Du Temple type, each of which has 826 tubes. The grate area of each is 43 square feet, and the heating surface 1,641 square feet.

Speed and Cargo Records—Lake Freight Boats.

Iron ore: Maritana, Minnesota Steamship Company of Cleveland, 4,260 gross or 4,771 net tons, Escanaba to South Chicago; S. S. Curry, Hawgood & Avery Transit Company of Cleveland, 3,852 gross or 4,314 net tons, Escanaba to Fairport; Kearsarge, Interlake Company of Cleveland, 3,718 gross or 4,164 net tons, Escanaba to Cleveland.

Grain: Selwyn Eddy, Eddy Transportation Company of Bay City, 130,820 bushels of wheat, Detroit to Buffalo; Centurion, Hopkins Transportation Company, St. Clair, Mich., 147,812 bushels of corn, Chicago to Erie; Onoko, Minch estate, Cleveland, 187,657 bushels oats, Chicago to Buffalo.

Coal: E. C. Pope, Eddy Bros. of Bay City, 3,950 net tons anthracite, Buffalo to Chicago.

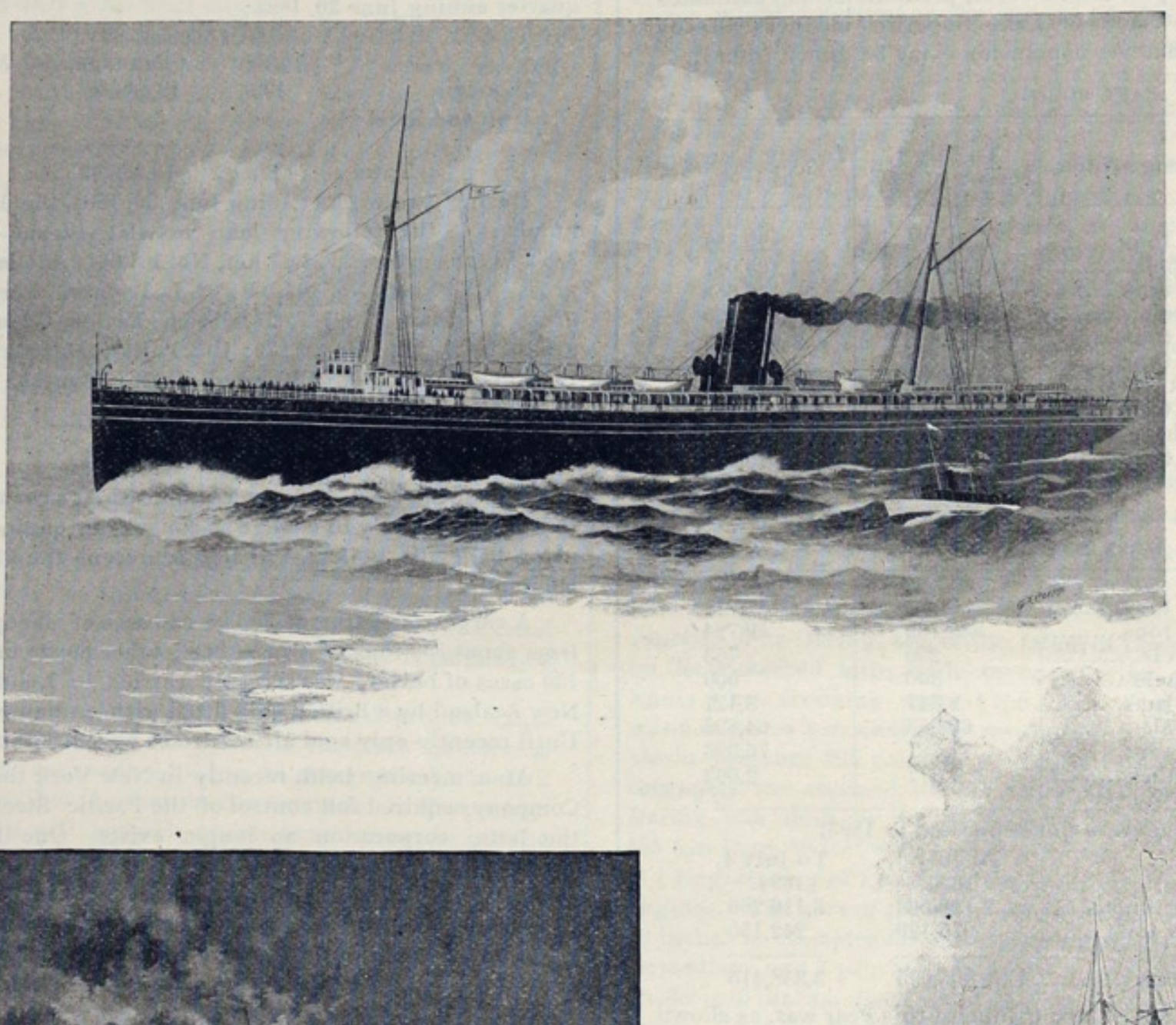
Speed: Owego, Union Line of Buffalo, Buffalo to Chicago, 889 miles, 54 hours and 16 minutes, 16.4 miles an hour.

Shipments of anthracite coal out of Buffalo to July 1 aggregated 726,407 tons, against 933,055 tons on the same date last season.

A Marine Artist.

(Illustrations from the Inland Printer, Chicago, Ill.)

Marine men have been surprised for some time at seeing some correct marine sketches in the Chicago Tribune, probably the only daily paper on the lakes that affords such a feature. The gentleman who is responsible for this work is shown at the head of this article, and his name is G. A. Coffin. He has been connected with the Tribune for three years. The first work that attracted attention generally in marine circles was his water color of the Manitou for the L. M. & L. S. T. Co. It is probably as "fetching" a marine picture as has ever portrayed a lake boat. A reproduction of it is shown herewith.



His early life was spent in Fairhaven, Mass., and it was there he picked up his love for water and the craft that ride on it. He has spent a number of years in drawing for lithographers and wood cutters and therefore has the faculty of turning out work that reproduces well in the different engraving processes. He is a hard worker. After using his pen all day for the Tribune he rests up by working with the brush in the evening. In addition to the scene of the Manitou a water color entitled "A Man Overboard," and a general sketch of a scene at the mouth of the Chicago river is shown.

Ship builders may be interested in knowing that from an ordinary blue-print, with a few instructions as to colors to be used in painting a boat, Mr. Coffin can prepare a finished water color like that of the Manitou. This would often prove a convenience, and the owner after seeing the painting might suggest changes, which would cost far more if they were made after plans were completed.

There is only one other marine artist on the lakes capable of doing this, and that is Howard Sprague of Cleveland.

Compliments on the Review's Special Issue.

From all parts of the United States and from foreign ship-building and ship-owning firms who had been informed of the contents of the last issue of the REVIEW previous to its publication, orders have been received for extra copies, and it is more than probable that the edition has already had a wider circulation than any publication of its kind ever issued. Among ship builders and architects on the coast as well as the lakes, the distribution of this special issue of the REVIEW has been complete. Compliments received from members of the Lake Carriers' Association on the merit of the large photo-gravure group of managers have been very numerous. The picture served to show the importance of the organization more forcibly than any history of its work that might be written. There are several owners of vessel property whose portraits appear in the group and to whom special credit is due for the success of the organization. Some of them were spoken of in a short reference to the affairs of the old Cleveland Vessel Owners' Association. In that association, which was the main ground work of the present body, Mr. B. L. Pennington of Cleveland was one of the founders, and for ten years following its organization he filled the positions of both secretary and treasurer, which in those days involved all of the detail.

On account of numerous letters and notices of a complimentary kind received within the past few days the REVIEW may be pardoned in quoting a few of them herewith:

American Shipbuilder, New York.—"The MARINE REVIEW of the

30th ult. contains a fine supplement embellished with beautiful illustrations, among which is a group of the officers and managers of the Lake Carriers' Association; the twin screw steel passenger steamer North West showing details of her construction, etc. The REVIEW is one of the most wide-awake and enterprising journals of the west, and is deserving of great credit for its latest efforts."

Marine Journal, New York.—"The Cleveland MARINE REVIEW begins its tenth volume and fifth year with a very creditable double number, including seven double page engravings on special paper illustrative of the new lake steamship North West, built by the Globe Iron Works Company, and kindred vessels and interests of its especial constituency about the fresh water seas."

Railway Review, Chicago.—"The MARINE REVIEW of June 30 is a notable number. Accompanying it are six large sheets 18 x 13 inches in size, containing half tone engravings of the new steamer North West of the Northern Steamship Company, and one of the same size containing portraits of the officers and managers of the Lake Carriers' Association. The views and portraits are excellent, that of the steamer under steam being particularly fine and worthy of a good frame. The MARINE REVIEW is to be congratulated upon its enterprise in placing before its readers so handsome a supplement."

Detroit Journal.—"The MARINE REVIEW for last week is a most creditable production, comprising fifty pages, besides seven photographic supplements. One of these is made up of portraits of the officers and managers of the Lake Carriers' Association, fifty-eight in number. It is a fine specimen of artistic work; every face in the collection is a perfect likeness. Among the portraits are those of Messrs. D. C. Whitney, E. M. Peck, Wm. Livingstone, jr., H. S. Hodge, James W. Millen, D. Carter and A. A. Parker of Detroit. Over twenty of the engravings relate to the steamer North West and are both interesting and valuable to the student of marine architecture."

Richard P. Joy, Detroit, Mich.—"Inclosed please find $1 for extra copies of the last issue of the REVIEW. It is a beautiful work of art."

H. E. Schmuck, Springfield, Mass.—"My paper for last week was a little late in reaching me, but it was well worth the delay, and I think the publishers should have a large credit mark for such an effort. I enclose $1, and would request you to mail a copy to each of the addresses noted herewith."

F. D. Herriman, American lake representative, Bureau Veritas, Chicago, Ill.—"I beg to thank you for the fine engravings in your late issue. They certainly do you much credit."

The S. E. Hendricks Co., New York, publishers of Architects' and Builders' Guide and Contractors' Directory of America.—"The last number of your valuable journal, accompanied with cuts of the twin-screw passenger steamship North West, &c., has been received, and we take this opportunity to thank you for your kindness in remembering us, and to express our appreciation of the artistic merit of the views. The furnishing of your readers with such excellent views of the latest design in ship construction speaks well for your journal and shows that it is keeping abreast of the times."

Fisher Electrical Manufacturing Company, Detroit, Mich.—"Your edition of June 30 enclosing complete supplements and description of steamer North West is at hand. The entire issue is one of the best editions we have ever seen published by a marine paper. Considerable skill and care is noted in the preparation of the articles and you certainly deserve the highest praise for the enterprise and lavish expense exhibited in the 'banner edition of the MARINE REVIEW.'"

John Gordon, general manager Northern Steamship Company, Buffalo, N. Y.—"I congratulate you on the recent special edition of the REVIEW, as it certainly does credit to your publication."

"The MARINE REVIEW, published at Cleveland, Ohio, issued a handsome double number for the last week in June at a heavy expense. A large supply of extra copies has been printed and they may be secured at 50 cents each. Special rates will be made to agents."—Milwaukee Sun.

Cleveland Plain Dealer: "The current issue of the MARINE REVIEW contains about fifty pages of illustrations that must have cost several hundreds of dollars. The publishers obtained photographs of the big passenger steamer North West through all stages of construction, and some of the illustrations of the ship and her various grand saloons are wonderful specimens of art in photo engravings. Probably the most interesting feature of the engravings is an excellent group of all the directors of the Lake Carriers association covering two pages."

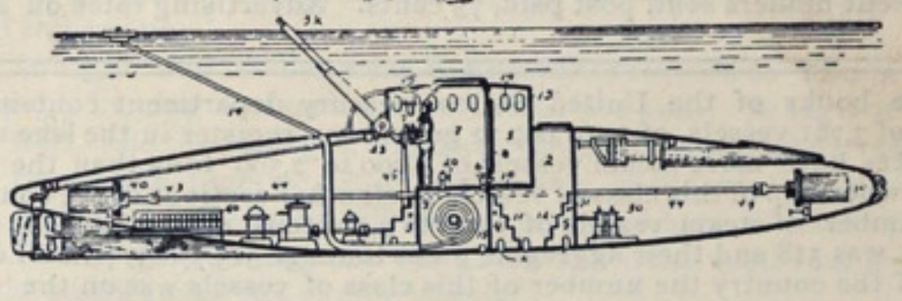
Illustrated Patent Record.

SELECTED ABSTRACTS OF SPECIFICATIONS OF A MARINE NATURE—FROM LATEST PATENT OFFICE REPORTS.

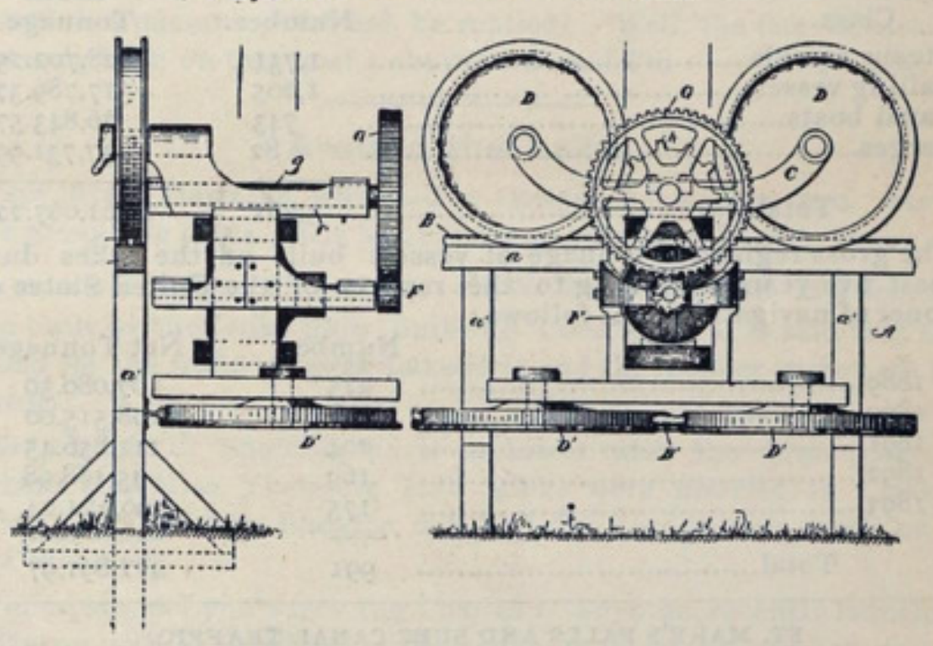
521,854. SUB-MARINE BOAT. Daniel T. Freese and James D. Gawn, North Amherst, Ohio Filed Aug. 26, 1892. Serial No. 444,165.

Claim.—The combination with a submarine vessel provided with a water-ballast chamber having an aperture 16 communicating with the outside of the vessel and an opening 20 through which air may be supplied to the interior of the vessel, of a rotatable pipe or pump cylinder 18 having its eduction and induction ports located within the ballast chamber, and a hose constructed so that one end may be extended to the atmosphere above the water in which the vessel is submerged and having its other end connected with the induction port of said pipe or cylinder whereby the hose may be wound upon said pipe and within the ballast chamber.

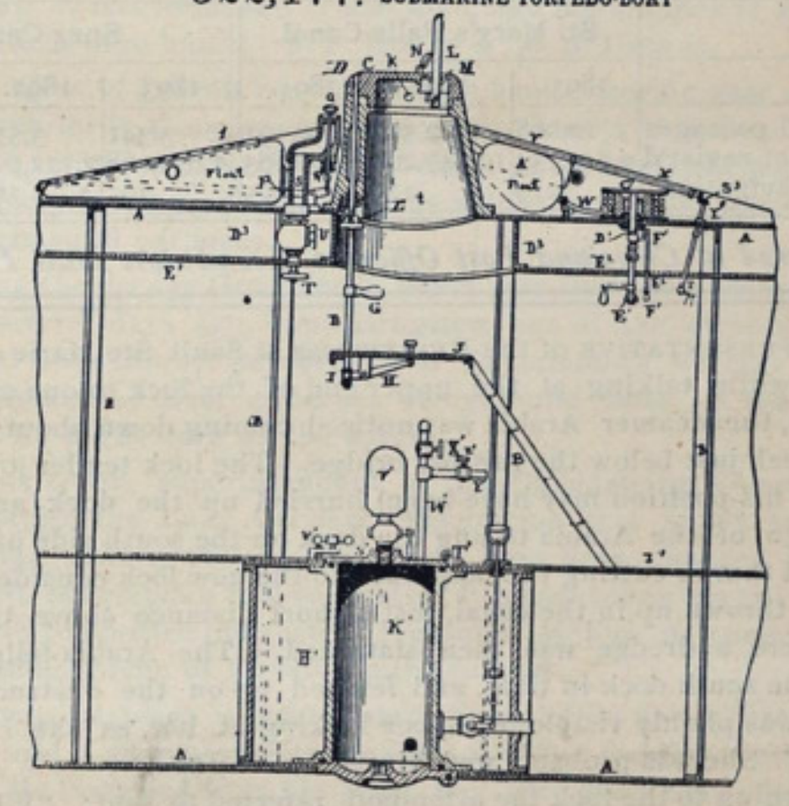
521,854. SUBMARINE BOAT.



521,865. TRACTION DEVICE FOR CANALS.



522,177. SUBMARINE TORPEDO-BOAT



521,865, TRACTION DEVICE FOR CANALS, Francis A. Pocock, Scranton, Pa. Filed Feb. 13, 1893. Serial No. 462,175.

Claim.—A traction device for a canal or other water way, consisting of a single rail elevated railway adjacent thereto, rigid working electric conductors incorporated in said railway, an electric locomotive supported on said rail and capable of being tilted laterally thereon, and comprising current collecting devices bearing against said conductors, and a drawbar on said locomotive arranged above said rail and at one side of the same, whereby an abnormal strain on said bar will tilt the locomotive and separate one of said collecting devices from its rigid conductor, thereby breaking the electrical circuit.

522,177. SUB-MARINE TORPEDO BOAT. John P. Holland, Newark, N. J. Filed May 23, 1892. Serial No. 433,970.

Claim.—First, the combination with the turret of a submarine boat of a ball-and-socket joint in the shell of said turret, a camera-obscura sliding through the ball, and a spring cover outside the ball. Second, in combination with the shell of a torpedo boat, a reel attached to said shell, a handle within the boat whereby the reel is operated, a float and hose connecting said float with the reel, and a pipe connection from the interior of the boat to the hose on the reel. Third, the combination with a submarine boat of a central diving tank built into the permanent structure of the boat and consisting of a vertical cylinder, of a passage opening from said cylinder through the shell, and pipe leading to said tank, by which gas may be forced in and water expelled.

MARINE REVIEW.

DEVOTED TO THE LAKE MARINE AND KINDRED INTERESTS.

Published every Thursday at No. 516 Perry-Payne building, Cleveland, O.
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The books of the United States treasury department contain the names of 3,761 vessels, of 1,261,067.22 gross tons register in the lake trade. The lakes have more steam vessels of 1,000 to 2,500 tons than the combined ownership of this class of vessels in all other sections of the country. The number of steam vessels of 1,000 to 2,500 tons on the lakes on June 30, 1893, was 318 and their aggregate gross tonnage 525,778.57; in all other parts of the country the number of this class of vessels was,on the same date, 211 and their gross tonnage 314,016.65. The classification of the entire lake fleet on June 30, 1893, was as follows:

Class.	Number.	Gross. Tonnage.
Steam vessels	1,731	828,702.29
Sailing vessels	1,205	317,789.37
Canal boats	743	76,843.57
Barges	82	37,731.99
Total	3,761	1,261,067.22

The gross registered tonnage of vessels built on the lakes during the past five years, according to the reports of the United States commissioner of navigation, is as follows:

	Number.	Net Tonnage.
1889	225	107,080.30
1890	218	108,515.00
1891	204	111,856.45
1892	169	45,168.98
1893	175	99,271.24
Total	991	471,891.97

ST. MARY'S FALLS AND SUEZ CANAL TRAFFIC.

	St. Mary's Falls Canal.			Suez Canal.		
	1893.	1892.	1891.	1893.	1892.	1891.
No. vessel passages	12,008	12,580	10,191	3,341	3,559	4,207
Ton'ge, net regist'd	9,849,754	10,647,203	8,400,685	7,659,068	7,712,028	8,698,777
Days of navigation..	219	223	225	365	365	365

Entered at Cleveland Post Office as Second-class Mail Matter.

A REPRESENTATIVE of the REVIEW was at Sault Ste Marie on Sunday last, and while talking at the upper end of the lock to one of the canal employes, the steamer Arabia was noticed coming down about the center of the canal, just below the railway bridge. The lock tender (or employe, whatever his position may have been) hurried up the dock and warned the captain of the Arabia to hug the dock on the south side of the canal, as he said that in cutting the approach to the new lock considerable rock had been thrown up in the canal, just a short distance above the present lock, where a dredge was then stationed. The Arabia failed to work over to the south dock in time, and fetched up on the obstruction in a way that was plainly visible to anyone looking at her, as she listed considerably. She was probably not injured.

Returning to the lock the attendant referred to said: "While I have been on duty here I have informed all vessels coming down of this obstruction. The Pontiac and two or three other boats fetched up on it and it will be surprising if some of the big fellows don't get hurt."

Sure enough, there are reports since of two steel boats, the Grecian and Devereaux, striking so hard in the canal above the lock that they will have large repair bills to meet. Now, the question arises, were the captains of these vessels also informed of the existence of the obstruction referred to? If they were, it is not reasonable to suppose that they would run into it. At least two masters of vessels whose boats passed down after the Arabia on Sunday said they had no notice of the obstruction, but they were fortunate enough to get through without injury. There is no excuse in the first place for allowing obstructions of this kind to remain for any great length of time in the canal, and if they must be there it would seem that some of the numerous employes at the lock would find time to notify vessels of their existence. If contractors engaged in dredging and blasting in and around the canal are to continue throwing up rocks in the channels without looking after their removal, vessel owners will be warranted in taking prompt measures to see that captains are at least fully notified of the location of such obstructions.

MR. E. T. CHAMBERLAIN, United States commissioner of navigation, is doing a grand work in showing that the policy of nations and states throughout the world is to reduce taxation of vessel property to very low figures, or exempt entirely the vessels themselves and tax only their earnings. Comparisons of a most forcible kind are contained in his latest exhaustive summary of the subject of taxation of vessels throughout the world, showing, for instance, that taxes levied last year on the small number of Cleveland vessels listed in the city proper were more than the taxes paid the German, French and English governments by their three great steamship lines, the North German Lloyd, the Compagnie Generale Transatlantique and the Cunard line on their $48,000,000 of shipping. When this subject is taken up by the vessel owners of the lakes it would seem, from several matters that have come to light since the question has been under discussion, that the effort should not be to seek relief from federal legislation. The supreme court of the United States has held that the states have the right to make taxation laws of this kind. The number of states on the lakes is not large, and with the example set by Buffalo and Chicago in levying practically no taxes on vessels it should not be a difficult task to present the matter in a proper light to the legislatures of all states on the lakes so as to secure favorable action.

PRESIDENT George Uhler of the Marine Engineers' Beneficial Association was not slow in announcing that there would be no strike among marine engineers. Mr. Uhler is opposed to strikes on general principles, and he was right in making such announcement at the outset of the troubles inaugurated in Chicago, thus preventing any misguided members of the association from quitting their situations. A strike among marine engineers on the lakes at this time would simply result in vessels being laid up with no loss to their owners.

BOTH HOUSES of the dominion parliament have passed the bill giving a charter to the Lake St. Clair and Lake Erie Ship Canal Company, which, as its name indicates, proposes to construct a canal between Lake St. Clair and Lake Erie, paralleling the present waterway between these lakes. It is difficult to understand why the Canadian parliament should give up its time to such schemes.

ALL indications point to a heavy wheat crop throughout the northwest. Government officials report frequent and beneficial rains. If profitable lake freight rates are to be paid at any time this season they certainly ought to come during the latter part of the year, when there will be some grain to move and when time entirely lost by coal shippers must be made up.

IT must be admitted that in the several close contests between the champion American sloop Vigilant and the Prince of Wales' cutter Britania on the River Clyde fortune was on the side of the British boat. Americans will be more interested in the trials of speed in open sea.

REPRESENTATIVE Baldwin, of Minnesota, has introduced in Congress another bill (H. R. 7667) for locating and constructing a ship canal from the great lakes to the Atlantic ocean. This question will not down with the people of the Northwest.

Dredging in Lake St. Clair.

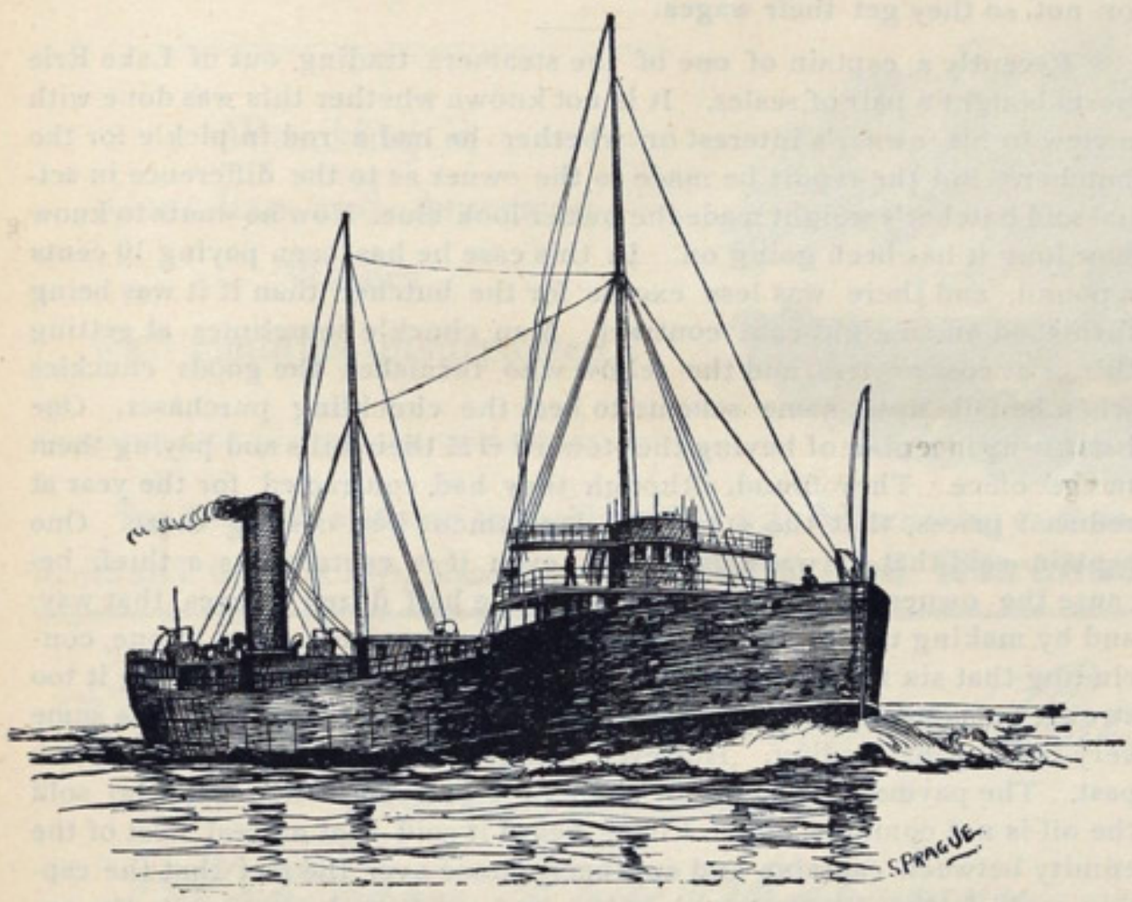
General Poe is quoted in one of the Detroit papers as saying that there is no ground for the fear among vessel masters that the 20-foot channel cuts, especially in the vicinity of Grosse point, Lake St. Clair, will fill up soon after it is completed. The channel averages 800 feet in width, he says, and for every foot dredged at the sides, and extending a certain distance out, there is a slope of 1½ feet. It is figured that what little material does set into the cut will spread itself down this slope and merely increase its width, and that at the furthest the slope will not intrude 9 feet on each side, thus decreasing the width of the channel to about 780 feet. This slope was made for the double purpose of protecting the bottoms of boats and the center of the channel. The general says furthermore that at the foot of St. Clair flats, where the dredges are thickest, the amount of silt is small, almost nothing, and that from the Grosse point light down the current of the river forms a natural channel. But a comparatively small part of the lake has to be dredged. Where heavy dredging is required on Lake St. Clair—6 feet 2 inches being the greatest depth and the average much less at these points—the material is blue clay and very nearly as hard as rock. Even should the channel fill in at some points in the course of five years, the engineers say it could be dredged out at a small cost.

At the Oliver mine, Mesabi range, a steam shovel taking iron ore from the open mine pit is credited with loading, in a day of ten hours, as high as 120 cars, averaging 24½ tons each. Steam shovels working on surface stock piles in other parts of the Lake Superior region have in several instances loaded more than 100 cars in a day.

AN EXTRA COPY OF THE PHOTO-GRAVURE SUPPLEMENT OF DIRECTORS OF THE LAKE CARRIERS' ASSOCIATION, TOGETHER WITH THE LARGE ENGRAVING OF THE STEAMER NORTH WEST, BOTH OF WHICH WERE CONTAINED IN OUR LAST ISSUE, WILL BE MAILED IN A PASTEBOARD TUBE TO ANY ADDRESS UPON RECEIPT OF 50 CENTS IN STAMPS.

Freight Steamer Kearsarge.

Another steel freight steamer constructed by the Chicago Ship Building Company has made a record among the largest boats on the lakes. The steamer Kearsarge, owned by the Interlake Company of Cleveland, will very probably prove the largest package freight carrier on the lakes, if she is placed at any time this season in that trade, for which provisions were made in her design. On her first trip she carried from Escanaba to Cleveland a cargo of 3,718 gross or 4,164 net tons of ore, which is next to the largest cargo ever taken through the rivers. Last season the steamer S. S. Curry, owned by the Hawgood and Avery Transit Company of Cleveland, carried 3,852 gross or 4,314 net tons from Escanaba to Fairport.



The Kearsarge's big cargo was unloaded at the Nypano dock on Monday in twelve hours, with the use of six hoists of the Brown Hoisting and Conveying Company's manufacture.

The Kearsarge is in every way a representative lake vessel. She is given the highest class in the Standard Register of New York. Her triple expansion engines and Scotch boilers, both about the largest of the types in lake vessels, were constructed by the Cleveland Ship Building Company. She will be managed in the office of Pickands, Mather & Co. of Cleveland in connection with the boats of the Minnesota Steamship Company and the Huron Barge Company. The engraving of the boat appearing herewith was made from a rough sketch prepared by Howard F. Sprague.

A Story from Mr. J. F. Holloway.

Mr. J. F. Holloway, one of the leading members of the American Society of Mechanical Engineers, and who was at the head of the old Cuyahoga Works, Cleveland, has a very interesting article on "The Early Steamboats of the Lakes" in the July number of the Engineering Magazine. Among a few interesting reminiscences contained in the article is the following:

"The theory of the steam engine and the apparent complications connected with its use were to many of the passengers so hopeless a problem that they gave up its solution at the very start, while others, more persistent, spent many of their leisure hours between ports in seeking to solve its mysteries. Among the latter was a well-dressed, thoughtful looking man, who at one time was a passenger on a somewhat famous boat in its day, in which the propelling power consisted of a row of return-flue boilers down in the hold, and a single horizontal steam engine in plain view of the main deck, directly connected to the cranks on each paddle wheel shaft. With so much in plain sight, it would seem that little or no explanation would be required by any observer, but with a belief no doubt that there were other necessary and hidden mechanisms, this would-be scientist spent many hours of several days in watching the operation of the machinery and in tracing out the sequence of its motion. Standing near the steam cylinder he would watch with interest the alternating movement of the piston rod with its attached cross head, and the long, iron-strapped, wooden connecting rod reaching forward to the paddle-wheel shaft, noting with care how its swinging end seemingly turned the cranks to which it was attached. He would then turn back to the steam cylinder, apparently to trace out some unseen or overlooked appliance believed to be essential for the work to be done. Finally after several days of silent contemplation, and with an unsatisfied expression on his face, he ventured to approach the person in charge, and the following conversation was had:

"'I beg pardon, sir, but I believe you are the engineer of this boat,' said the passenger, to which the somewhat grimy man with an oil can in his hands briefly replied, 'I am.'

"'Well, sir,' said the well-dressed stranger, 'I am very much interested in mechanics, and have given the study of the steam engine much thought and am quite familiar with the generation of steam and its application to machinery generally, but there are some things connected with the application of steam to the propelling of boats that I can not quite understand, and I will be greatly obliged to you if you will kindly give me the required information.'

"'All right,' said the engineer, as he reached forward to dope a suspiciously dry looking spot on the main slides, 'fire away. What is it?'

"'Well,' said the stranger, timidly, 'there are your boilers,' pointing to the two smoke pipes which on either side of the boat passed up between decks. 'I understand all about them, and here is your cylinder, and that is all clear to me, but what I can not quite make out is where does the steam strike the paddle wheels?'

"This was a stunner for the knight of the starting-bar, who no doubt had never passed a civil service examination, but, after scratching his head with his unemployed hand, he replied: 'Well, the fact is, stranger, I have only been on this boat a short time, and I'm —— if I know.'"

Around the Lakes.

Capt. Byron Hawkins, who died at Oswego e few days ago, was well known along the lakes. His last command was the schooner Typo.

A wooden steamer 239 feet over all, 35 feet beam and 12½ feet hold, will be built by the Jenks Ship Building Company. It is said that she is intended for the trade between Lake Erie and the copper region of Lake Superior.

Mr. Adolph U. Sheldon, naval architect with the Globe company, Cleveland, and Miss Theodore Hull Ricks were married in Cleveland Tuesday. Mr. and Mrs. Sheldon will sail for Europe this week on the Fuerst Bismarck.

Thompson & Lynn's new tug Charles L. Boynton, recently launched at Port Huron, will be fitted out with complete wrecking appliances. She is 95 feet long, 20 feet beam and 11 feet hold, and has engines 17 and 36 by 30 inches, which were built by S. F. Hodge & Co. of Detroit.

John E. Allen of Detroit has invented a hand steering gear which is said to be superior to steam or electrical gears. Merits of the machine are claimed to be sufficient to warrant the Detroit and Cleveland Steam Navigation Company in fitting one of its boats with it during the coming winter for experimental purposes.

In raising the dredge Gen. Meade, which was sunk just below the St. Clair canal several days ago, Capt. Hingston, one of the owners of the boat, secured from Detroit the services of Grummond's wrecker Young America, a submarine diver and a set of hydraulic jacks. A Wells light will be used for night work on the wreck.

Mr. Frank Owen, superintendent of the Ogdensburg Transit Company, has notified the Lake Carriers' Association that buoys in the St. Lawrence river, vicinity of Cross-over light, have been changed this season, and masters complain that as located at present they are misleading. The executive committee instructed Treasurer McKay to communicate with Commander Green of Buffalo on the subject.

Capt. James Davidson is fast accumulating another fleet of big wooden boats, to be sold if an opportunity for earning better freights is ever again presented. He launched from his West Bay City yard a few days ago a steamer that measures 257 feet over all, 37 feet beam and 14 feet deep in the shoalest place. The engines are triple expansion, 16, 25 and 42 inches in diameter by 34 inches stroke. The boilers are 12 feet 3 inches by 12 feet, fitted with the Howden system of forced draft.

The United States circuit court of appeals has affirmed the decision of Judge Swan of the United States district court of Detroit in the case of the owners of the barge Wahnapitae against the steamer John M. Nicol. The barge, a large unwieldy craft built for carrying saw logs, went to pieces off the Cleveland breakwater, after she had been dropped by the steamer in a storm. Owners of the barge claimed that the steamer ought to have held onto her, but the defense claimed that the tow was unmanageable, and that the Nicol for her own safety was compelled to cast off the tow line.

Furnaces of the new Johnson Company at Lorain will be located near the river, so as to receive iron ore and other supplies direct from vessel. They will cover an area of 500 by 1,500 feet. The steel mills will cover an area of 1,300 by 2,400 feet. Between them will be the main switch from the railroad, two miles of which has already been built and operated by the company's own locomotive. The line is now used for hauling materials for the buildings from the railroad. Several miles of branch switches have also been laid out, diverging in all directions. The main power will be furnished by a 2,000 horse power engine, an order having been placed for it some time ago. The company now has 500 men at work and is adding over 100 a week to its force.

[CONTINUED FROM PAGE 5.]

breakdown of some pumps. The quantity of coal requisite to be burned to obtain the above result is also enormous, being (at two pounds per horse power per hour) about 19 tons per hour, or 456 tons each day when running at full speed. Forced draft is a necessary adjunct, and the system here adopted is of the "closed fire room" type. There are sixteen 60-inch Sturtevant blowers in the fire rooms; one directly in front and over each end of each boiler. As the capacity of a single blower is about 10,000 cubic feet of air per minute it is an easy matter to figure the great quantity of air to be driven through the fires.

The main engines are of the inverted, vertical cylinder, direct acting triple expansion type. The single Y frames and front columns give them a decidedly light and graceful appearance without detracting from their substantial qualities. There are three sets of engines (triplicates in details), one for each screw shaft, and each in its separate water tight compartment. The center engine is abaft of the wing engines. The system of auxiliaries and of piping from the boilers makes each engine wholly independent of the others in every particular. The principal dimensions are as follows: Number cylinders each engine, 3; diameter high pressure cylinder, 42 inches; diameter intermediate pressure cylinder, 59 inches; diameter low pressure cylinder, 92 inches; stroke, 42 inches; diameter of piston rods, 8⅛ inches; length of connecting rods, 71 inches; diameter of crank pins, 17 inches; length of crank pin, 21½ inches; diameter of crank shaft, 16 inches; diameter of axial hole in crank pins, 8½ inches; diameter of axial hole in main shaft, 7½ inches. The center of the hubs of the port and starboard screws are three feet above the center screw and also three feet forward. The propellers are three-bladed, adjustable from 19½ to 21½ feet pitch. The diameter of the center screw is 14 feet and the side screws 15 feet. Maximum revolutions of these screws will be 136 per minute, which will give a speed of 60 knots an hour to the tips of the blades. The main condensers are 14 feet 9 inches long by 6 feet 7 inches diameter. Each condenser has 4,894 tubes ⅝ inches diameter and 12 feet long, aggregating about 38 miles in length. The cooling surface is 28,422 square feet. The main air pumps are of the Blake inverted, vertical, twin-cylinder type, the steam cylinders being 16 inches, water cylinders 31 inches, stroke 21 inches. The main circulating pumps are of the centrifugal type, two for each cylinder; diameter of steam cylinders 10 inches, stroke 6 inches; diameter of centrifugal pumps 36 inches, diameter of suction and discharge 12 inches. In addition to this there are 26 seperate steam pumps, eight ash hoisting engines, two dynamo engines, one ice machine, one steering engine, one capstan engine, three steam winches, nine ventilating blowers, and two distillers and evaporators, besides the two steam launches. The bunkers will carry about 1,600 tons.

Tips from the Man on the Dock.

It is said that the system of sending seamen's wages to their homes, recently adopted in Great Britain, is meeting with success. Probably no greater benefit could be conferred on lake sailors and firemen than to put a similar rule in operation. Increase of wages would be an injury to many of this class, but after a year's practice of putting their money where it would be of use to them in the winter, or of use to their families, then it would do some good, if the profits of the vessel business permitted. Of course there will be many objections raised and most of them will come from dock saloon keepers who get their money each trip, or each month, as soon as the men are paid. When the sailors have spent their last cent in the fall then these blood suckers kick them into the street and they are dependent on bethel homes and soup houses. Many of the supposed homeless class of sailors have homes, but they are ashamed to go to them after spending all their money and they lay around some lake port until navigation opens. For those who have no homes the money could be deposited with the owner, who could put the total amount of wages in some reliable savings bank and have it drawing interest for them. For those who have homes a certain amount could be sent there and a certain amount deposited with the owner. The average salary of employes below the position of mate is $20 and $25, helpers to cooks and deck hands getting from $12 to $15. Suppose they commence work in April at $22.50 per month, and $2.50 is kept out for personal expenses, and $20 deposited. The first of October that $20 will have earned 40 cents, the next deposit will earn 33 cents, and if $20 is deposited each month there will be $120 principal and $1.40 interest to his credit. If the sailor can get work to support him through the winter then his first season's earnings will make nearly $5 for him the next year. This is figuring at the lowest interest, 4 per cent., and owners could, if they desired, place it where it would probably make 6 per cent. or better. One objection urged would be that many only make one trip. This can be overcome by hiring a better class of men, who can be had in large numbers under the present conditions. The system can not be started generally but must emanate from owners who take a personal interest in the welfare of their men, and captains who have a conscience and a heart. One of the most successful owners on the lakes has only two captains and one engineer in the fleet who did not begin in some such position as watchman, deck hand, fireman or sailor, and graduate to the best position on the boat. One of the best engineers on the lakes made his way up in this employ, and one of the captains was a young German who didn't know what yes meant when asked if he wanted work as a deck hand. Now that owners are not so busy making money they can find time to think of how they can help these men who man their boats. He who merely gives largely of his money to charity only goes half way. Thought and interest in the result carries it to its goal.

A few years of this treatment will do more to break up seamen's unions than all the shipping masters ever employed, for the dissatisfaction that leads to strikes will disappear. A man helped in this way will work for the boat's interest, and as it is now there are very few outside of those in some good paying position who care whether the boat makes anything or not, so they get their wages.

Recently a captain of one of the steamers trading out of Lake Erie ports bought a pair of scales. It is not known whether this was done with a view to his owner's interest or whether he had a rod in pickle for the butcher. But the report he made to the owner as to the difference in actual and butcher's weight made the owner look blue. Now he wants to know how long it has been going on. In this case he has been paying 10 cents a pound, and there was less excuse for the butcher than if it was being furnished on an eight-cent contract. Men chuckle sometimes at getting things at cost or less, and the fellow who furnishes the goods chuckles when he falls upon some scheme to beat the chuckling purchaser. One line hit upon a plan of having the steward O K their bills and paying them in the office. They found, although they had contracted for the year at reduced prices, that the steward's department was costing more. One captain said that it was a bad plan, even if a captain was a thief, because the owners laid themselves open to a half dozen thieves that way, and by making the captain responsible they were only open to one, concluding that six thieves could steal more than one. This is putting it too strong, but a book on "how vessel owners are robbed" would make some very interesting reading. However, things are much better than in years past. The payment of $5 for an empty oil barrel by the party who sold the oil is not common now. I have heard it said that a great deal of the enmity between captains and engineers arose over the fact that the captain could feather his nest with butter and sugar and eggs, while the engineer had to just use ordinary waste and oil. Another thing that is wrong—engineers claim they do not get enough pay to keep them from working in machine shops in the winter. When there are any repairs to be made on his engine, if the engineer has a say, they are made by the shop where he worked, and as he knows what they can do in that shop it is perfectly right. But suppose excess time is put in here, an overcharge there, how many engineers have the moral courage to kick? It may mean the loss of a winter's job. This may not be general but I have heard engineers talk of it. It would be quite possible for owners to pay the engineers' wages in the winter without having known it. And the owners and brokers—I don't know so much about them, as I am on the dock, and not in the Perry-Payne building, Cleveland, or around Sherman street in Chicago, or Main street, in Buffalo, or along the river even in Detroit! However, as to paying taxes, chartering boats and other features in the businesss, I guess they manage to forget what they were taught in Sunday school, just as easy as the men who are working for them. But the pot calling the kettle black doesn't add anything to the appearance of the pot, and take the business all in all there is probably much less skullduggery to the opportunities offered than in many other industries. This might be posted in our hats without hurt to our moral nature:

"If thou couldst in vision see
Thyself, the man God meant,
Thou never more couldst be
The man thou art, content."

Stocks of Grain at Lake Ports.

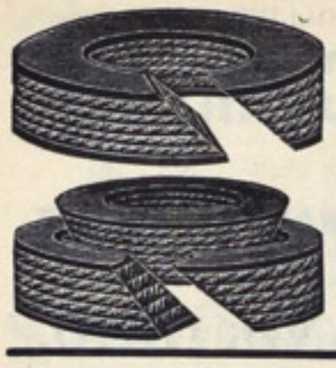
The following table, prepared from reports of the Chicago board of trade, shows the stocks of wheat and corn in store at the principal points of accumulation on the lakes on July 7, 1894:

	Wheat, bu.	Corn, bu.
Chicago	17,669,000	17,350,000
Duluth	4,726,000	.....
Milwaukee	968,000	2,000
Detroit	1,080,000	1,000
Toledo	2,123,000	51,000
Buffalo	1,249,000	289,000
Total	27,815,000	2,078,000

At the points named there is a net decrease for the week of 1,151,000 bushels of wheat and a decrease of 733,000 bushels of corn.

A JOINT ticket office for the accomodation of persons wishing to have Christian Endeavor tickets exchanged or limit extended, will be established in Cleveland, at No. 45 The Arcade and will be open until Sept. 1. It is in charge of E. S. Menough, who will be assisted by A. M. Crowl.

FOUR steel engravings of U. S. war ships and a color plate of the steel steamer Gratwick will be forwarded by MARINE REVIEW, 516 Perry-Payne Bldg., Cleveland, O., to any address on receipt of $1.



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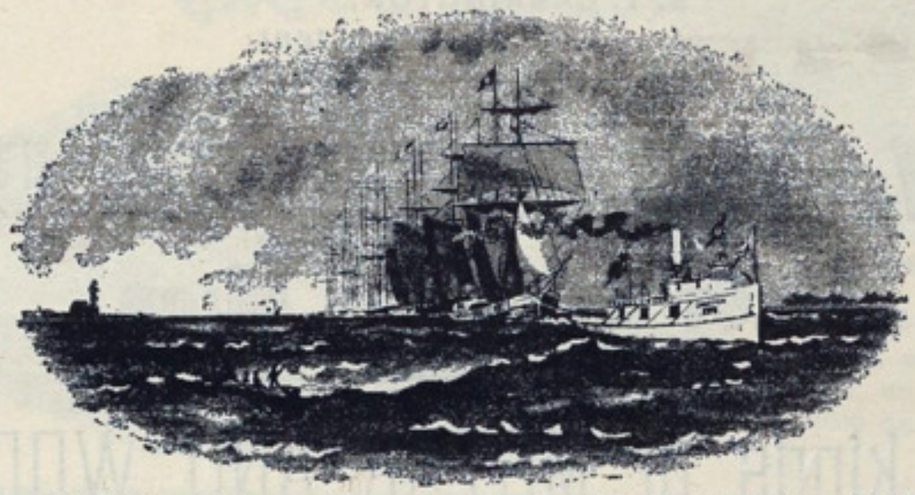

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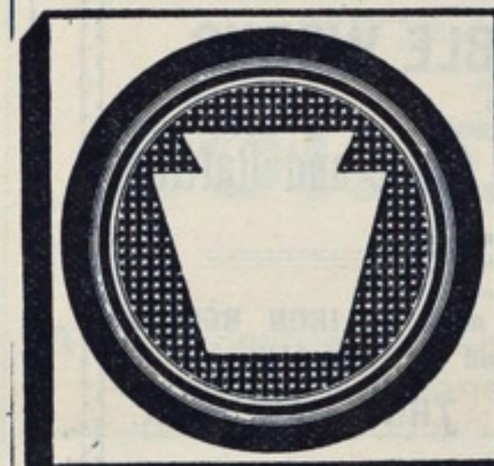

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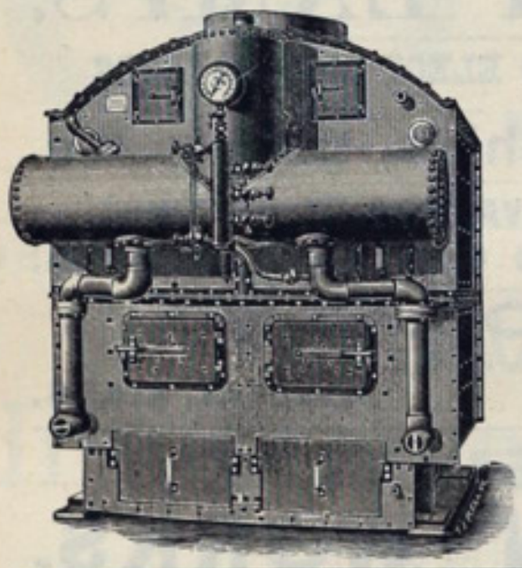

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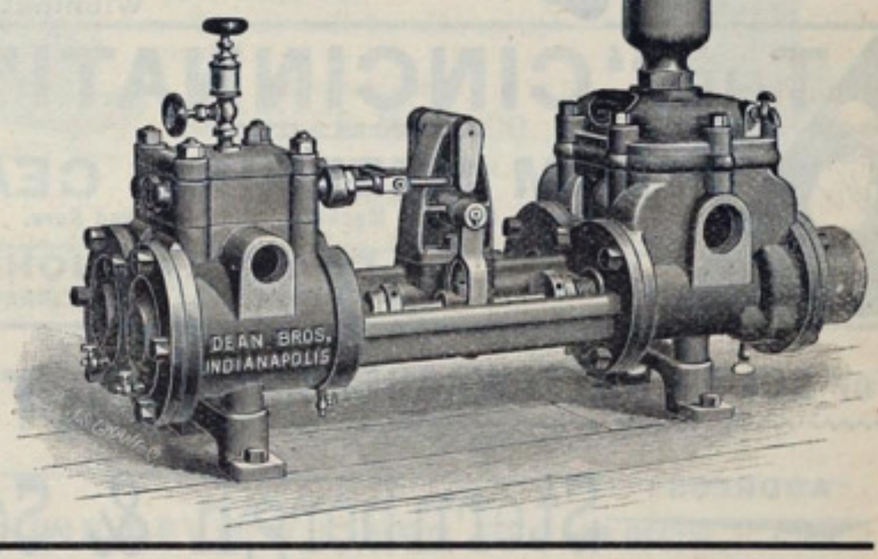

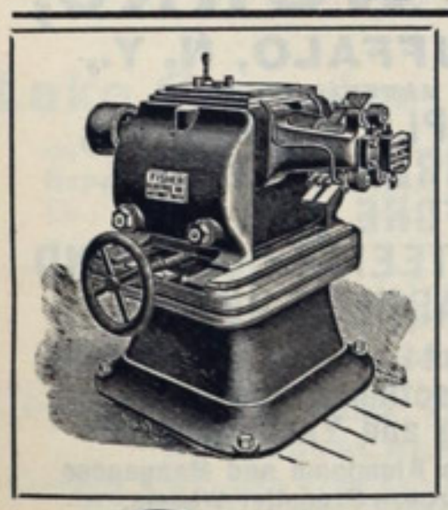

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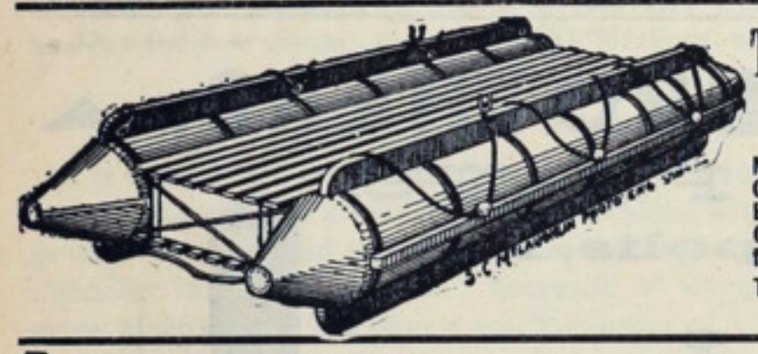

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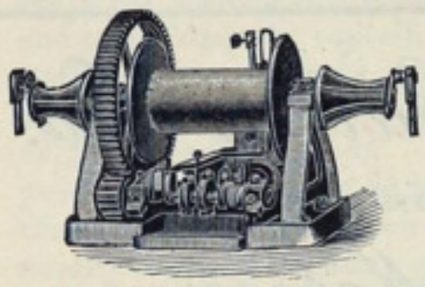

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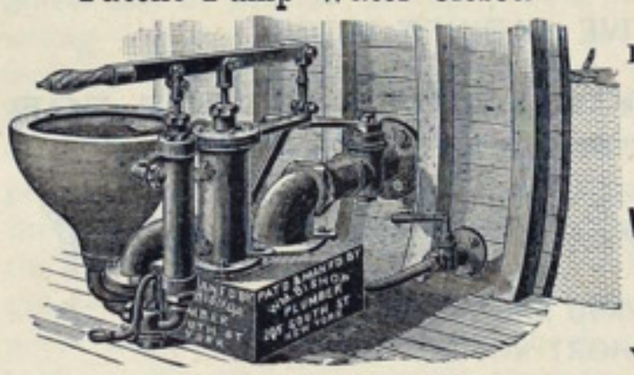

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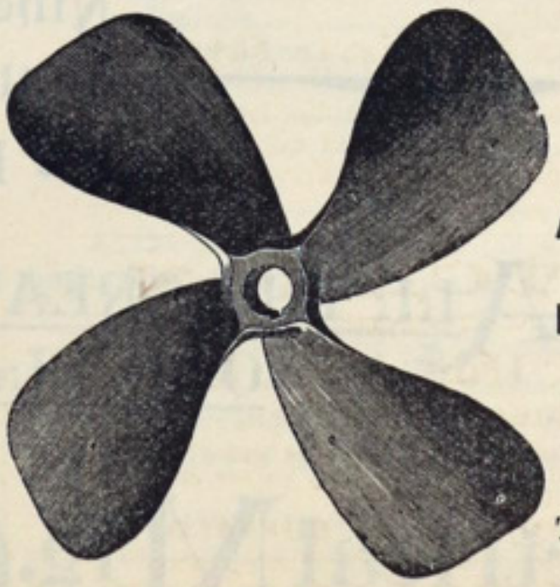

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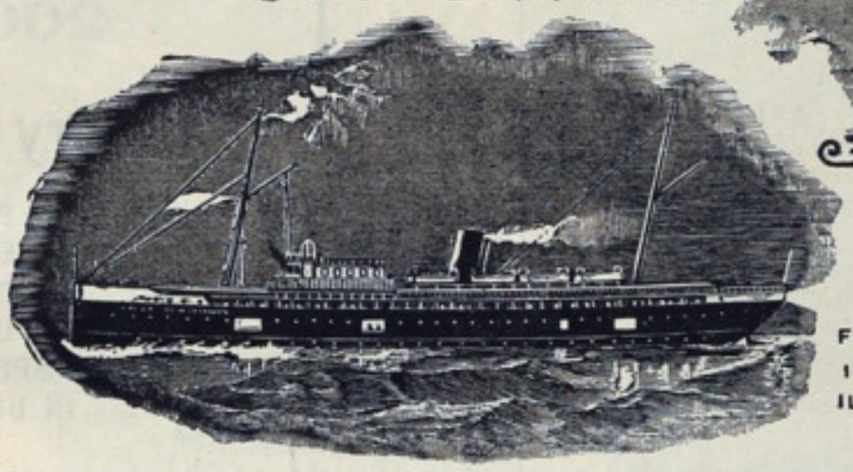

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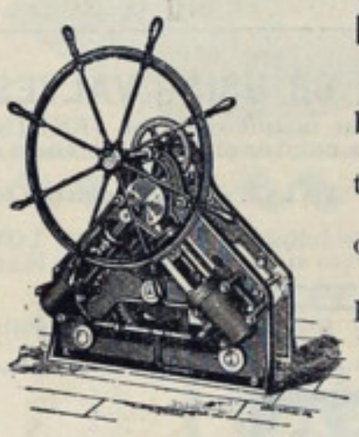

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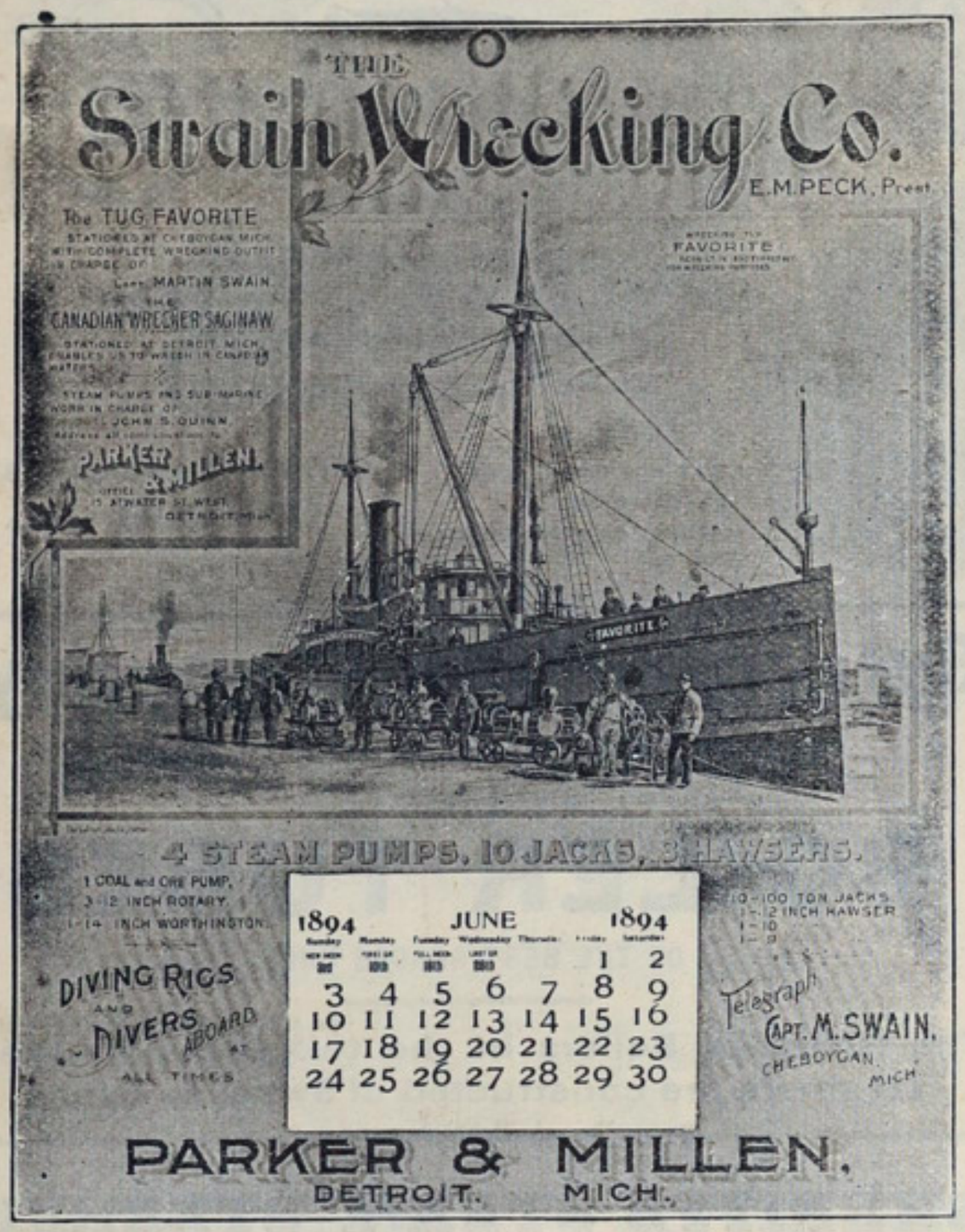

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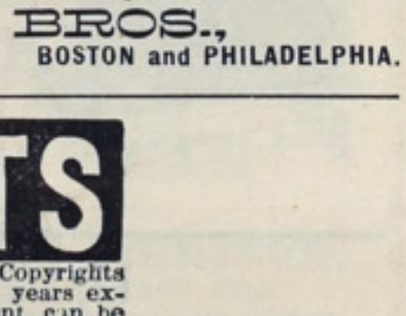

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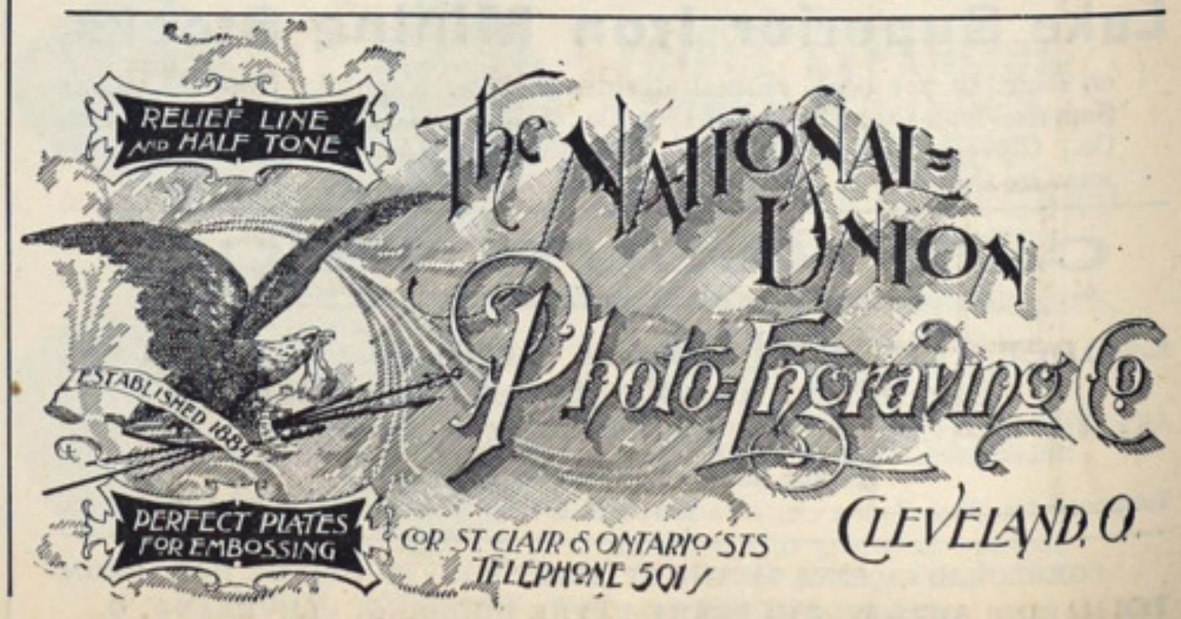

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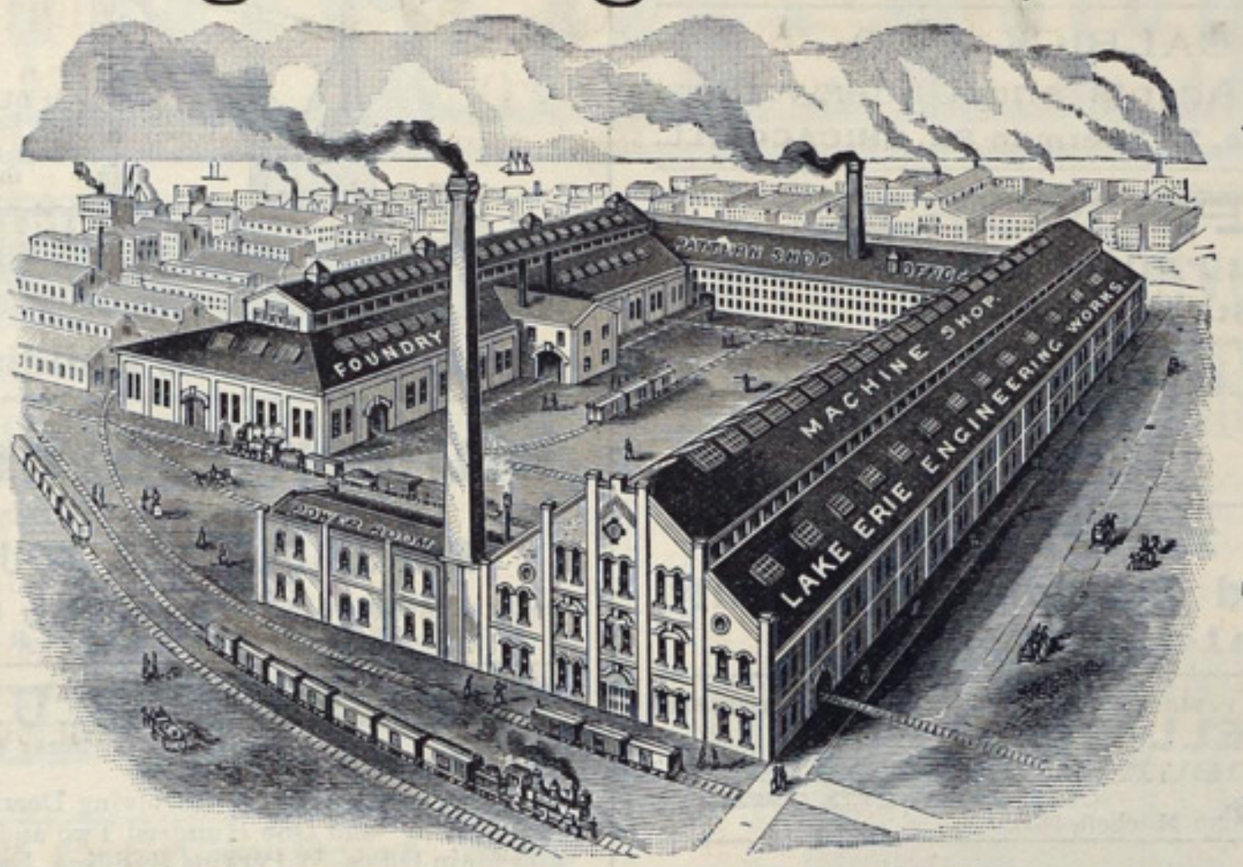

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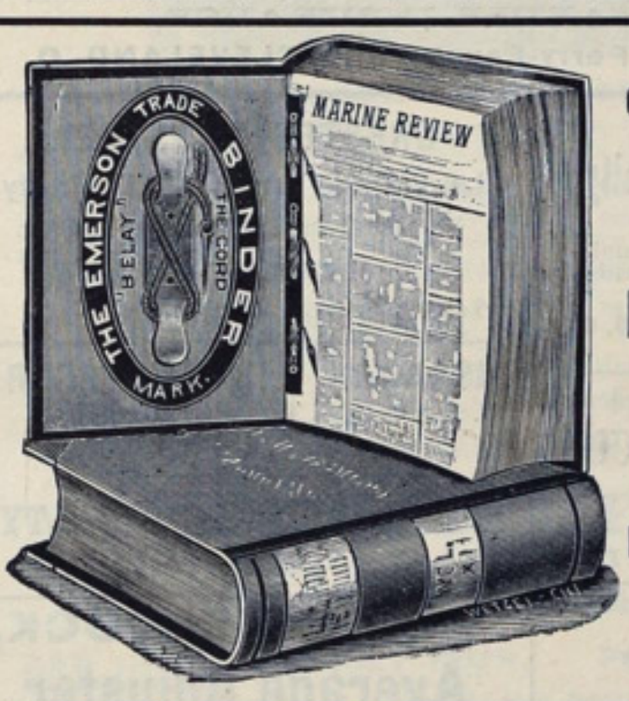

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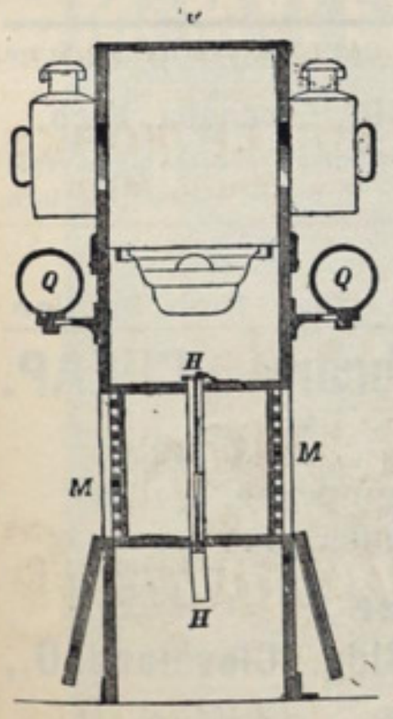

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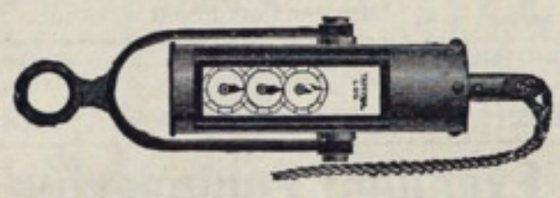

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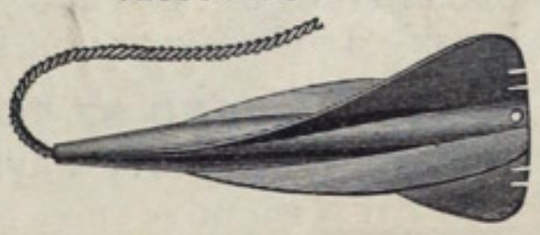

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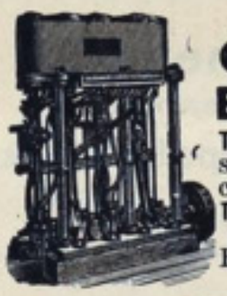

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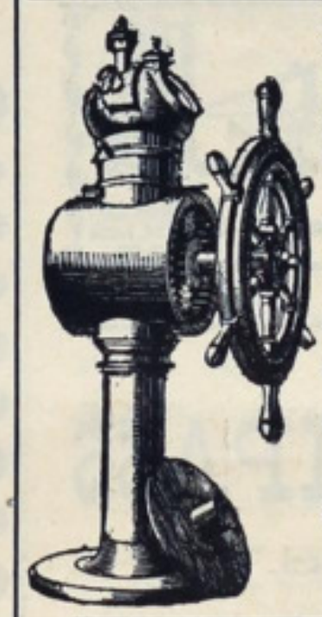

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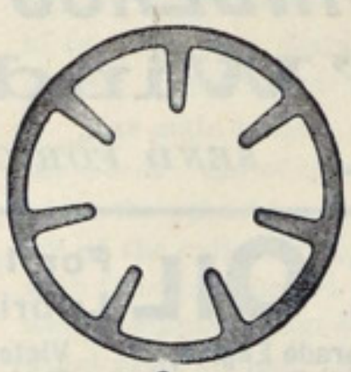

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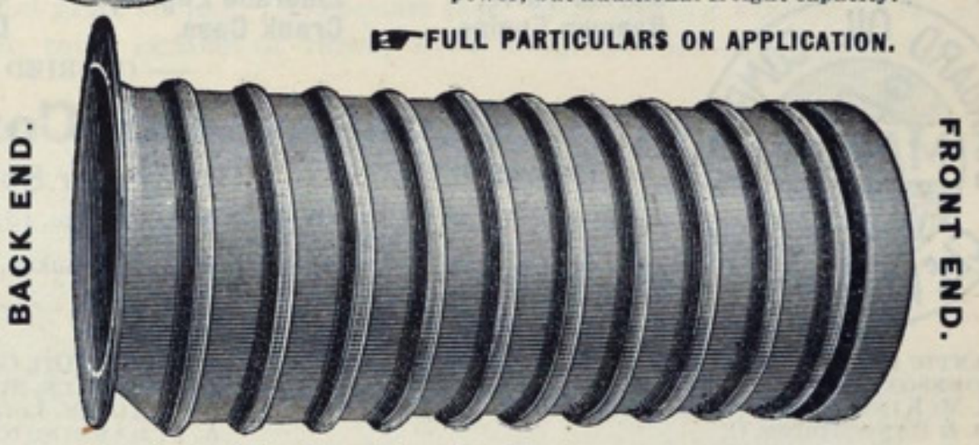

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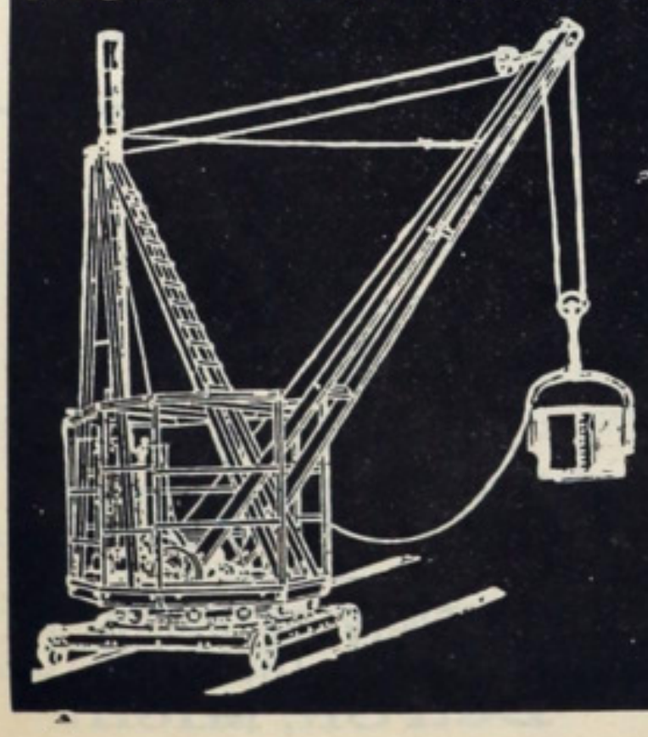

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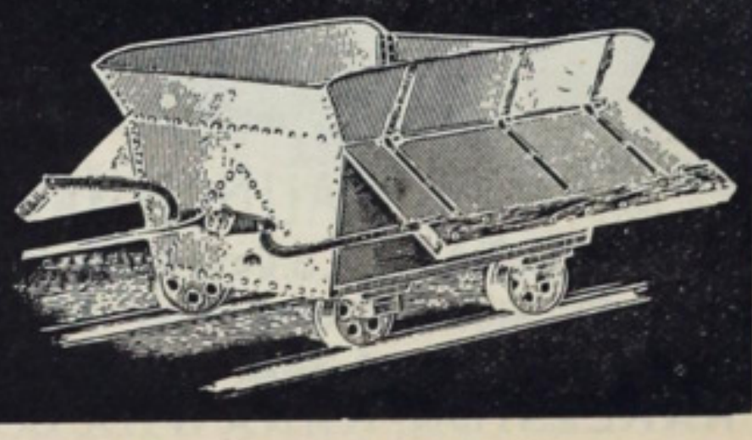

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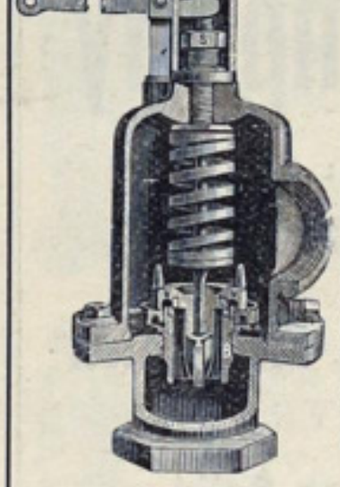

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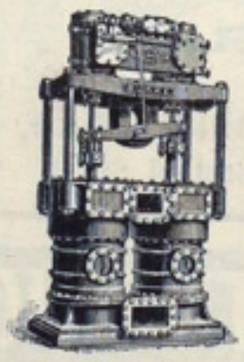

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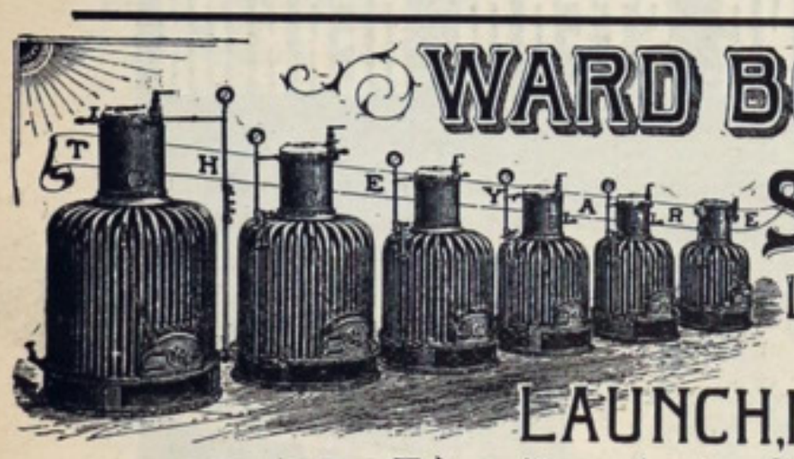

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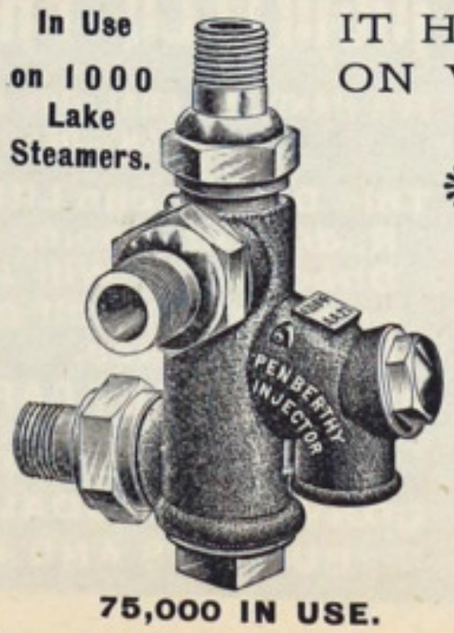

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